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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/879,554	06/12/2001	James E. Dibb	1956/135	4580
2101	7590	05/20/2005	EXAMINER BADERMAN, SCOTT T	
BROMBERG & SUNSTEIN LLP 125 SUMMER STREET BOSTON, MA 02110-1618			ART UNIT 2113	PAPER NUMBER

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/879,554

Applicant(s)

DIBB, JAMES E.

Examiner

Scott T. Baderman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 15 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Contrary to the Applicant's remarks made on February 16, 2005, claim 1 includes all of the limitations taught in claim 15, thereby making claim 15 an improper dependent claim.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

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Claim 1 includes the limitation: "such that the mirrored subsystem is substituted for the failed disk drive in the redundancy group *and the redundancy of the redundancy group is restored, when the failed disk drive contains redundancy data for the redundancy group* (italicized words were amended into claim 1 on February 16, 2005)." After reviewing the specification thoroughly, the Examiner did not find any adequate written description for this amendment (see response to arguments below).

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 16-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kedem (6,154,853).

As in claim 16, Kedem discloses a computer implemented method for handling a failed disk drive in a redundancy group of disk drives in an array of disk drives, wherein the failed disk drive is located in a failed disk drive slot that comprises creating a mirrored subsystem within the array using a temporary disk drive (element 31 of Figure 5) and the failed disk drive slot (element 34 of Figure 5) (Figures 4 and 5, Abstract, column 5: lines 5-59, column 6: lines 35-57), reconfiguring the redundancy group to consist of the disk drives of the redundancy group that have not failed (elements 32, 36 and 38 of Figure 5) and the mirrored subsystem (element 31 of Figure 5), such that the mirrored subsystem is substituted for the failed disk drive (element 34 of Figure 5) in the redundancy group (i.e., if element 34 of Figure 5 should fail, and if the data therein has been copied to element 31 of Figure 5 (mirrored copy), then element 31 of Figure 5 will replace the failed element 34 of Figure 5) (Figure 5, column 5: line 5-66), and reconstructing each data block of the failed disk drive and writing each reconstructed data block to the mirrored subsystem (i.e., if element 34 of Figure 5 should fail prior to copying the data therein to the spare device, the data of element 34 of Figure 5 can be reconstructed and then copied to the spare device) (Figures 4 and 5, column 5: lines 37-59).

As in claim 17, Kedem discloses inserting a replacement disk drive in the failed disk drive slot, copying data from the temporary disk drive (spare) to the replacement disk drive, and replacing the mirrored subsystem with the replacement disk drive after the data on the replacement disk drive matches the data on the temporary disk drive (i.e., once the data from the spare device has been written to the replaced disk (i.e., it matches) and the parity regenerated for

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all of the logical volumes, the spare device can be returned to an inactive state) (column 6: lines 35-57).

As in claim 18, Kedem discloses a disk drive array system that comprises a redundancy group comprising at least two disk drives and associated disk drive slots (elements 32, 34, 36 and 38 of Figure 3), a temporary (spare) disk drive with an associated temporary disk drive slot (elements 31, 33 and 35 of Figure 3), logic that detects a failure of one of the disk drives in the redundancy group (column 2: lines 32-35), logic that reconfigures the redundancy group to comprise the disk drives in the redundancy group that have not failed and a second storage array, wherein the second storage array operates as a mirrored subsystem comprising the temporary (spare) disk drive and the disk drive slot associated with the failed disk drive (Figures 4-6, column 5: lines 5-59), and logic that reconstructs the data blocks on the failed drive to the mirrored subsystem (Figures 4-6, column 5: lines 37-59).

As in claim 19, Kedem discloses logic that restores the redundancy group to its initial configuration, wherein a replacement disk drive replaces the failed disk drive after the temporary disk drive and a replacement drive inserted in the disk drive slot associated with the failed disk drive contain the same data (column 6: lines 35-57).

### ***Response to Arguments***

6. Applicant's arguments filed February 16, 2005 have been fully considered but they are not persuasive.

With respect to claim 1, it includes the limitation: “such that the mirrored subsystem is substituted for the failed disk drive in the redundancy group *and the redundancy of the redundancy group is restored, when the failed disk drive contains redundancy data for the redundancy group* (italicized words were amended into claim 1 on February 16, 2005).” After reviewing the specification thoroughly, the Examiner did not find any adequate written description for this amendment. That is, nowhere in the specification is it taught that “*the redundancy of the redundancy group is restored, when the failed disk drive contains redundancy data for the redundancy group.*” On page 6, lines 21-28 of the specification, it is taught that data on the failed disk drive is reconstructed using data on the remaining drives B and C and that each of the reconstructed data block is stored on the mirror subsystem, however, nowhere is it even implied that that *the redundancy of the redundancy group is restored when the failed disk drive contains redundancy data for the redundancy group.*

The Applicant argues “a person of ordinary skill in the art would understand that the term “data block,” as used in the specification, means all blocks on the failed disk drive, including both logical volumes and redundancy data. The Examiner respectfully disagrees. On page 6, lines 27-28 the specification specifically teaches that only “reconstructed data” is stored on the mirrored subsystem. Not only does the Examiner disagree with the above statement regarding that “a person of ordinary skill would understand...” – for there is no explanation as to “why” one would understand this – but the Examiner further believes that by teaching that the data stored on the mirrored subsystem is “reconstructed data,” a person skilled in the art would have not understood this to include redundancy data – only reconstructed data. To the Examiner, the

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fact that one even needs to rely on “a person skilled in the art’s opinion,” further strengthens the point that this limitation lacks adequate written description.

Regarding the Applicant’s argument that “it would not be reasonable to infer that a person skilled in the art would understand that a mirrored subsystem is created and then restricted to copying only the logical volumes of the failed disk drive,” the Examiner points to Kedem (6,154,853) column 5: lines 9-12 who specifically teaches this happening. That is, Kedem did find it “reasonable that a mirrored subsystem is created and then restricted to copying only the logical volumes of the failed disk drive.”

7. Applicant's arguments with respect to claim 1 (regarding the prior art) have been considered but are moot in view of the new ground(s) of rejection.

8. Applicant's arguments filed February 16, 2005, regarding claims 16 and 18, have been fully considered but they are not persuasive.

With respect to claims 16 and 18, the Applicant argues that both claims require reconstructing the redundancy data blocks of the failed disk drive and writing these blocks to the mirrored subsystem, and that Kedem does not teach this limitation. The Examiner respectfully disagrees that claims 16 and 18 require reconstructing the redundancy data blocks of the failed disk drive and writing these blocks to the mirrored subsystem. See reasoning above.



***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott T Baderman whose telephone number is (571) 272-3644. The examiner can normally be reached on Monday-Friday, 6:45 AM-4:15 PM, first Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Scott T Baderman  
Primary Examiner  
Art Unit 2113

STB